

State/Industry Ambient Monitoring Network

Air Quality Report

2nd Quarter 2006

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SECTION ONE

DISCUSSION OF MONITORING RESULTS

Sulfur Dioxide (SO₂)

There were no exceedances of either the state or the federal standards during the quarter. The maximum 1-hour concentration was 87 ppb on June 6 at Bear Paw - MGP #5; the maximum 3-hour concentration was 34 ppb on June 4 at Bear Paw - MGP #5; and, the maximum 24-hour concentration was 15 ppb on May 24 at Hess - Tioga #3. The highest arithmetic mean is 2.1 ppb at Hess - Tioga #3. All sites achieved at least an 80% data recovery for the period operated.

Sulfur Dioxide (SO₂) 5-Minute Average

The maximum 5-minute concentration was 214 ppb on June 29 at Bear Paw - MGP #3. All sites achieved at least an 80% data recovery for the period operated.

Trace Level Sulfur Dioxide (SO₂)

There were no exceedances of either the state or the federal standards during the quarter. The maximum 1-hour concentration was 5.7 ppb on June 2 at Fargo NW; the maximum 3-hour concentration was 3.4 ppb on April 26 at Fargo NW; and, the maximum 24-hour concentration was 1.3 ppb on April 5 at Fargo NW. The highest arithmetic mean is 0.3 ppb at Fargo NW. The site achieved at least an 80% data recovery for the period operated.

Trace Level Sulfur Dioxide (SO₂) 5-Minute Average

The maximum 5-minute concentration was 9.5 ppb on June 27 at Fargo NW. The site achieved at least an 80% data recovery for the period operated.

Ozone (O₃)

There was no exceedance of the ozone standard during the quarter. The highest observed 1-hour concentration was 83 ppb on June 27 at Beulah - North. The highest 4th highest 8-hour concentration was 62 ppb on April 16 Beulah - North. All sites achieved at least an 80% data recovery for the period operated.

Nitrogen Dioxide (NO₂)

The highest observed 1-hour concentration was 37 ppb on April 4 at Fargo NW. The maximum arithmetic mean concentration was 6.0 ppb at Bismarck Residential. All sites achieved at least an 80% data recovery for the period operated.

Ammonia (NH₃)

The highest 1-hour concentration was 79.6 ppb on May 9 at Beulah - North . The site achieved an 80% data recovery for the period.

The data is used as part of the ambient data input used by the newer dispersion models.

Inhalable Continuous PM_{2.5} Particulates

There was no exceedance of the 24-hour standard during the quarter. The highest 24-hour concentration was 54.2 µg/m³ on June 27 at Beulah North. The highest arithmetic mean concentration was 7.5 µg/m³ at Beulah North and at Hannover. All sites achieved at least an 80% data recovery for the period operated.

Inhalable PM_{2.5} Particulates

There was no exceedance of the 24-hour standard during the quarter. The highest 24-hour average concentration was 21.3 µg/m³ on June 28 at Bismarck Residential. The highest arithmetic mean was 7.6 µg/m³ at Fargo NW. All sites achieved at least an 80% data recovery for the period.

Inhalable Continuous PM₁₀ Particulates

There was no exceedance of the 24-hour standard during the quarter. The maximum 24-hour concentration was 56.0 µg/m³ on June 27 at Bismarck Residential. The highest arithmetic mean was 19.0 µg/m³ at Fargo NW. All sites achieved an 80% data recovery for the period.

SECTION TWO

AMBIENT AIR QUALITY DATA

SUMMARIES

COMPARISON OF AIR QUALITY DATA WITH
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *

POLLUTANT : **Sulfur Dioxide** (ppb)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	1 - HOUR		M A X I M A		24 - HOUR		ARITH MEAN	1HR #>273	24HR #>99	% >MDV
				1ST MM/DD:HH	2ND MM/DD:HH	1ST MM/DD:HH	2ND MM/DD:HH	1ST MM/DD	2ND MM/DD				
Bear Paw - MGP #3	2006	APR-JUN	2162	33 06/29:16	30 06/15:10	12 06/29:17	11 06/15:11	2 06/29	2 06/15	1.0			1.0
Bear Paw - MGP #5	2006	APR-JUN	2143	87 06/04:10	62 06/27:08	34 06/04:11	22 06/27:08	5 06/04	4 06/27	1.1			4.2
Beulah - North	2006	APR-JUN	2164	24 05/25:12	22 05/25:11	13 05/25:11	12 06/08:05	4 05/25	4 06/19	1.4			10.0
Bismarck Residential	2006	APR-JUN	2170	16 06/30:08	16 06/30:10	10 06/15:20	10 04/12:11	4 05/08	4 05/16	1.4			16.2
DGC #12	2006	APR-JUN	2100	22 06/30:10	21 04/15:13	12 06/14:02	12 04/15:14	4 05/08	4 05/04	1.6			15.8
DGC #14	2006	APR-JUN	2125	66 04/25:08	51 04/27:09	23 04/25:08	23 04/27:11	5 04/27	5 06/14	1.6			12.1
DGC #16	2006	APR-JUN	2169	47 04/15:14	41 05/22:00	27 04/15:14	19 04/15:17	10 04/15	7 05/22	1.8			17.4
DGC #17	2006	APR-JUN	2168	42 04/15:14	37 04/10:09	22 04/15:14	21 04/10:11	10 04/15	6 04/10	1.5			11.1
Dunn Center	2006	APR-JUN	2167	8 05/13:07	7 04/05:12	5 06/08:20	5 06/14:02	3 06/08	3 06/14	1.1			4.5
Hannover	2006	APR-JUN	2170	33 05/12:08	32 06/23:12	22 06/23:14	15 06/02:23	6 05/12	5 06/23	1.7			17.3
Hess - Tioga #1	2006	APR-JUN	2141	24 04/27:08	19 04/15:10	10 04/15:11	9 04/27:08	3 04/27	2 04/15	1.3			9.2
Hess - Tioga #3	2006	APR-JUN	2138	48 05/24:21	47 04/17:12	31 05/24:17	28 04/17:14	15 05/24	10 05/04	2.1			19.0
Lostwood NWR	2006	APR-JUN	2159	17 05/28:13	12 05/29:01	8 05/29:02	6 05/11:05	3 05/24	2 06/22	1.2			8.1
TRNP - NU	2006	APR-JUN	2171	12 04/27:10	5 04/27:11	6 04/27:11	4 06/14:05	2 06/14	2 06/08	1.1			3.2

COMPARISON OF AIR QUALITY DATA WITH
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *

POLLUTANT : **Sulfur Dioxide** (ppb)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	1 - HOUR		M A X I M A 3 - HOUR		24 - HOUR		ARITH MEAN	1HR #>273	24HR #>99	% >MDV
				1ST MM/DD:HH	2ND MM/DD:HH	1ST MM/DD:HH	2ND MM/DD:HH	1ST MM/DD	2ND MM/DD				
TRNP - SU	2006	APR-JUN	2158	10 06/07:07	6 06/13:09	6 06/07:08	6 06/13:11	3 06/13	2 06/07	1.0			1.7

The maximum 1-hour concentration is 87 ppb at Bear Paw - MGP #5 on 06/04:10
The maximum 3-hour concentration is 34 ppb at Bear Paw - MGP #5 on 06/04:11
The maximum 24-hour concentration is 15 ppb at Hess - Tioga #3 on 05/24
The maximum arithmetic mean was 2.1 ppb at Hess - Tioga #3

* The air quality standards are:

STATE Standards -

- 1) 273 ppb maximum 1-hour average concentration.
- 2) 99 ppb maximum 24-hour average concentration.
- 3) 23 ppb maximum annual arithmetic mean concentration.

FEDERAL Standards -

- 1) 500 ppb maximum 3-hour concentration not to be exceeded more than once per year.
- 2) 140 ppb maximum 24-hour concentration not to be exceeded more than once per year.
- 3) 30 ppb annual arithmetic mean.

COMPARISON OF AIR QUALITY DATA WITH
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *

POLLUTANT : **Sulfur Dioxide 5-Minute Averages** (ppb)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	5 - M I N U T E M A X I M A						# HOURS >600	% >MDV
				1ST	DATE	2ND	DATE	3RD	DATE		
					MM/DD:HH		MM/DD:HH		MM/DD:HH		
Bear Paw - MGP #3	2006	APR-JUN	2162	214	06/29:16	172	06/15:10	59	04/15:16	0	2.9
Bear Paw - MGP #5	2006	APR-JUN	2143	190	06/27:08	148	06/04:10	100	06/04:09	0	13.3
Beulah - North	2006	APR-JUN	2164	32	05/25:12	31	06/08:03	29	04/05:10	0	17.2
Bismarck Residential	2006	APR-JUN	2170	32	06/30:10	31	05/08:07	23	04/25:09	0	20.6
Dunn Center	2006	APR-JUN	2167	10	05/13:07	10	06/14:00	9	04/05:12	0	8.4
Hannover	2006	APR-JUN	2170	121	05/18:21	96	04/05:07	85	05/12:08	0	25.7
Hess - Tioga #1	2006	APR-JUN	2141	74	04/27:08	61	04/27:10	58	04/15:10	0	13.0
Hess - Tioga #3	2006	APR-JUN	2138	136	05/10:18	122	05/25:10	120	05/25:08	0	36.3
Lostwood NWR	2006	APR-JUN	2071	48	05/12:17	41	05/28:13	25	05/25:09	0	14.8
TRNP - NU	2006	APR-JUN	2171	86	05/17:10	18	04/27:10	8	04/27:11	0	5.4
TRNP - SU	2006	APR-JUN	2158	16	06/07:07	11	06/07:06	7	04/06:10	0	5.3

The maximum 5-minute concentration is 214 ppb at Bear Paw - MGP #3 on 06/29:16

* No Standard is currently in effect

COMPARISON OF AIR QUALITY DATA WITH
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *

POLLUTANT : **Trace Level Sulfur Dioxide** (ppb)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	1 - HOUR		M A X I M A 3 - HOUR		24 - HOUR		ARITH MEAN	1HR #>273	24HR #>99	% >MDV
				1ST MM/DD:HH	2ND MM/DD:HH	1ST MM/DD:HH	2ND MM/DD:HH	1ST MM/DD	2ND MM/DD				
Fargo NW	2006	APR-JUN	2152	5.7 06/02:07	4.1 04/05:03	3.4 04/26:11	2.7 06/02:08	1.3 04/05	1.0 04/18	0.3			48.2

The maximum 1-hour concentration is 5.7 ppb at Fargo NW on 06/02:07
The maximum 3-hour concentration is 3.4 ppb at Fargo NW on 04/26:11
The maximum 24-hour concentration is 1.0 ppb at Fargo NW on 04/18
The maximum arithmetic mean was .3 ppb at Fargo NW

* The air quality standards are:

STATE Standards -

- 1) 273 ppb maximum 1-hour average concentration.
- 2) 99 ppb maximum 24-hour average concentration.
- 3) 23 ppb maximum annual arithmetic mean concentration.

FEDERAL Standards -

- 1) 500 ppb maximum 3-hour concentration not to be exceeded more than once per year.
- 2) 140 ppb maximum 24-hour concentration not to be exceeded more than once per year.
- 3) 30 ppb annual arithmetic mean.

COMPARISON OF AIR QUALITY DATA WITH
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *

POLLUTANT : **Trace Level Sulfur Dioxide 5-Minute Averages** (ppb)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	5 - M I N U T E		M A X I M A		# HOURS >600	% >MDV
				1ST DATE MM/DD:HH	2ND DATE MM/DD:HH	3RD DATE MM/DD:HH	DATE MM/DD:HH		
Fargo NW	2006	APR-JUN	2152	9.5 06/27:20	8.4 06/02:07	5.7 04/26:10		0	63.7

The maximum 5-minute concentration is 9.5 ppb at Fargo NW on 06/27:20

* No Standard is currently in effect:

COMPARISON OF AIR QUALITY DATA WITH
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *

POLLUTANT : **Ozone** (ppb)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	1 - HOUR		M A X I M A		8 - HOUR		4TH	1HR #>120	8HR #>80
				1ST MM/DD	2ND MM/DD	1ST MM/DD	2ND MM/DD	3RD MM/DD	4TH MM/DD			
Beulah - North	2006	APR-JUN	2167	83 06/27	75 06/03	75 06/27	63 06/02	62 04/22	62 04/16			
Bismarck Residential	2006	APR-JUN	2075	69 05/23	68 06/03	64 06/29	63 06/03	56 06/28	55 06/23			
Dunn Center	2006	APR-JUN	2165	72 06/27	65 05/26	66 06/27	54 04/22	54 05/07	54 04/05			
Fargo NW	2006	APR-JUN	2164	71 06/15	67 06/03	67 06/15	62 04/23	61 05/28	60 05/27			
Hannover	2006	APR-JUN	2170	71 06/03	70 06/27	66 06/27	65 06/03	61 06/29	58 05/23			
Lostwood NWR	2006	APR-JUN	2162	72 06/03	69 05/12	64 04/22	57 04/21	55 04/15	51 04/20			
TRNP - NU	2006	APR-JUN	2176	70 06/27	66 06/02	66 06/27	61 06/28	59 04/22	59 04/21			
TRNP - SU	2006	APR-JUN	2158	74 06/14	71 06/02	68 06/02	68 06/14	59 06/07	57 04/05			

The maximum 1-hour concentration is 83 ppb at Beulah - North on 06/27
The 4th highest 8-hour concentration is 62 ppb at Beulah - North on 04/16

* The air quality standards for ozone are:
STATE - 120 ppb not to be exceeded more than once per year.

FEDERAL - Fourth highest daily maximum 8-hour averages for a 3-year period not to exceed 80 ppb.

*** Less than 80% of the possible samples (data) were collected.

COMPARISON OF AIR QUALITY DATA WITH
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *

POLLUTANT : **Nitrogen Dioxide** (ppb)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	M A X I M A 1 - HOUR		ARITH MEAN	% >MDV
				1ST MM/DD:HH	2ND MM/DD:HH		
Beulah - North	2006	APR-JUN	2159	19 05/18:11	18 05/09:03	2.5	95.5
Bismarck Residential	2006	APR-JUN	2167	35 04/11:21	34 04/03:07	6.0	100.0
DGC #12	2006	APR-JUN	2036	28 04/05:09	22 05/28:02	2.2	81.0
DGC #17	2006	APR-JUN	2164	35 04/10:09	28 04/15:14	2.0	72.4
Dunn Center	2006	APR-JUN	2010	18 06/26:21	16 06/26:20	2.0	92.9
Fargo NW	2006	APR-JUN	2160	37 04/04:06	35 04/01:06	5.0	99.2
Hannover	2006	APR-JUN	2166	21 05/21:04	17 06/02:21	1.8	81.8
Lostwood NWR	2006	APR-JUN	2156	11 05/29:01	9 05/11:03	1.2	64.7
TRNP - NU	2006	APR-JUN	2167	6 06/08:05	6 06/08:07	1.1	81.9

The maximum 1-hour concentration is 37 ppb at Fargo NW on 04/04:06
The maximum arithmetic mean was 6.0 ppb at Bismarck Residential

* The air quality standards are:
STATE - 53 ppb maximum annual arithmetic mean.

FEDERAL - 53 ppb annual arithmetic mean.

COMPARISON OF AIR QUALITY DATA WITH
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *

POLLUTANT : **Ammonia** (ppb)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	M A X I M A					
				1ST	2ND	3RD	4TH	5TH	6TH
				MM/DD:HH	MM/DD:HH	MM/DD:HH	MM/DD:HH	MM/DD:HH	MM/DD:HH
Beulah - North	2006	APR-JUN	2149	79.6 05/09:02	57.4 06/19:07	46.7 05/25:12	44.9 05/24:18	42.1 04/21:00	39.6 04/21:03

* No standard is currently in effect.

COMPARISON OF AIR QUALITY DATA WITH
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *

POLLUTANT : **Inhalable Continuous PM_{2.5} Particulates** (µg/m³)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	M A X I M A						24 - HOUR	4TH	ARITH MEAN	24HR #>65	AM>15
				1ST	2ND	1ST	2ND	3RD	4TH					
				MM/DD:HH	MM/DD:HH	MM/DD	MM/DD	MM/DD	MM/DD					
Beulah - North	2006	APR-JUN	2161	69.1 06/27:09	62.8 06/27:08	54.2 06/27	19.1 06/28	18.3 06/29	18.2 06/26			7.5		
Bismarck Residential	2006	APR-JUN	2171	68.4 06/27:07	67.4 06/27:06	46.3 06/27	15.5 06/29	13.9 06/28	13.5 04/06			5.1		
Dunn Center	2006	APR-JUN	2159	57.5 06/27:18	54.0 06/27:19	38.8 06/27	15.7 06/29	15.3 06/28	11.3 06/26			4.3		
Fargo NW	2006	APR-JUN	2161	116.6 04/25:07	111.0 06/27:21	26.2 06/27	16.3 04/10	15.6 06/29	14.5 04/25			5.9		
Hannover	2006	APR-JUN	2157	65.9 06/27:06	65.8 06/27:09	53.4 06/27	19.0 06/28	17.9 06/29	16.2 06/26			7.5		
Lostwood NWR	2006	APR-JUN	2149	62.8 06/27:08	57.5 06/27:07	47.5 06/27	23.3 06/28	12.7 06/29	12.4 06/26			4.7		
TRNP - NU	2006	APR-JUN	2166	48.4 06/27:20	47.7 06/27:23	30.5 06/27	18.0 06/28	9.7 06/25	8.9 06/26			3.7		
TRNP - SU	2006	APR-JUN	2123	56.9 06/30:19	54.8 06/27:22	33.6 06/27	23.7 06/28	12.8 06/26	12.2 06/25			6.9		

The highest 24-hour concentration is 54.2 µg/m³ at Beulah - North on 06/27
The highest Annual Mean concentration is 7.5 µg/m³ at Beulah - North and Hannover

* The ambient air quality standards are:
FEDERAL Standards -

- 1) 24-hour: 3-year average of 98th percentiles not to exceed 65 µg/m³.
- 2) Annual: 3-year average not to exceed 15 µg/m³.

COMPARISON OF AIR QUALITY DATA WITH
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *

POLLUTANT : **Inhalable PM_{2.5} Particulates** (µg/m³)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	MIN	M A X I M A 24 - HOUR			ARITH MEAN	#> 65	AM>15	% >MDV
					1ST MM/DD	2ND MM/DD	3RD MM/DD				
Beulah - North	2006	APR-JUN	15	2.0	17.6 06/28	11.5 04/05	8.9 05/17	6.8			100.0
Bismarck Residential	2006	APR-JUN	30	2.8	21.3 06/28	11.7 04/05	10.5 05/23	6.4			100.0
Fargo NW	2006	APR-JUN	30	3.3	15.1 06/16	12.8 04/05	12.5 04/29	7.6			100.0
TRNP - NU	2006	APR-JUN	13	1.8	17.9 06/28	9.0 04/05	6.7 05/17	5.4			92.3
TRNP - SU	2006	APR-JUN	15	1.6	18.8 06/28	7.5 04/05	6.4 05/17	5.0			93.3

The maximum 24-hour concentration is 21.3 µg/m³ at Bismarck Residential on 06/28
The highest Annual Mean was 7.6 µg/m³ at Fargo NW

* The ambient air quality standards are:

FEDERAL Standards -

- 1) 24-hour: 3-year average of 98th percentiles not to exceed 65 µg/m³.
- 2) Annual: 3-year average not to exceed 15 µg/m³.

COMPARISON OF AIR QUALITY DATA WITH
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *

POLLUTANT : **Inhalable Continuous PM₁₀ Particulates** (µg/m³)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	1 - HOUR		M A X I M A		24 - HOUR		ARITH MEAN	24HR #>150	AM>50
				1ST MM/DD:HH	2ND MM/DD:HH	1ST MM/DD	2ND MM/DD	3RD MM/DD	4TH MM/DD			
Bismarck Residential	2006	APR-JUN	2169	190.0 04/06:16	131.0 04/06:17	56.0 06/27	51.4 04/06	34.0 06/29	33.5 05/23	16.5		
Dunn Center	2006	APR-JUN	2161	390.0 04/11:20	234.0 04/26:10	46.9 06/27	41.8 05/18	35.6 06/29	34.4 05/17	15.0		
Fargo NW	2006	APR-JUN	2161	204.0 04/25:07	123.0 06/27:21	53.8 05/23	40.3 04/27	40.0 04/25	38.3 06/02	19.0		
Lostwood NWR	2006	APR-JUN	2150	163.0 06/01:14	85.0 06/05:14	52.3 06/27	39.1 06/28	33.8 05/18	32.5 05/23	12.8		
TRNP - NU	2006	APR-JUN	2168	65.0 05/18:16	52.0 06/27:21	35.5 06/27	26.5 05/18	24.8 06/28	24.1 06/29	10.9		

The highest 24-hour concentration is 56.0 µg/m³ at Bismarck Residential on 06/27

The highest Annual Mean concentration is 19.0 µg/m³ at Fargo NW

* The STATE and FEDERAL air quality standards are:

- 1) 150 µg/m³ maximum averaged over a 24-hour period with no more than one expected exceedance per year.
- 2) 50 µg/m³ expected annual arithmetic mean.

SECTION THREE

EXCEEDANCE LISTINGS

By Site Date Hour

All Units Are in Parts Per Billion Except Wind Direction (Degrees),
Wind Speed (MPH), CO (PPM), and PM_{2.5} and PM₁₀ (µg/m³)

The * Identifies the Exceedances

NONE

By Date Hour Site

All Units Are in Parts Per Billion Except Wind Direction (Degrees),
Wind Speed (MPH), CO (PPM), and PM_{2.5} and PM₁₀ (µg/m³)

The * Identifies the Exceedances

NONE